PCPLUS★WARE™ NEWS
A PUBLICATION OF STSC, INC.

SUMMER 1985

STSC EXPANDS PUBLISHING BUSINESS TO INCLUDE PUBLICATIONS

STSC recently expanded its publishing business to include book publishing with its acquisition of APL Press of Palo Alto, California.

APL Press publishes and distributes reference books, tutorials, and self-study courses dealing with the APL programming language. Publications include several introductions to APL that focus on the use of APL in disciplines such as engineering and in teaching various topics such as algebra and calculus. APL Press' catalog also features publications that combine software with the literature.

STSC's book publishing business also includes distribution of several FinnAPL publications, including the popular *FinnAPL Idiom Library* and the new *FinnAPL Utility Library*.

According to John W. Myrna, senior vice president—APL Products and Services, the acquisition of APL Press provides valuable synergy with STSC's microcomputer publishing program.

Plans are to combine the book publishing experience of APL Press, particularly in the APL training area, with STSC's software product publishing to produce innovative packages such as self-contained APL courses.

For a complete list of publications and prices, see pages 9-10.

RELEASE 2.0 OF POCKET APL™ FEATURES LARGER FILES, EXPANDED DOCUMENTATION

Larger files and expanded documentation are among the enhancements featured in Release 2.0 of Pocket APL.

Pocket APL is a complete implementation of the APL programming language and includes report formatting, error trapping, native and APL shared file systems, online HELP, and over 50 system functions.

Pocket APL provides all the productivity gains of APL for only $95, which makes the product ideal as a second APL system for home use, casual APL users, or for users who want an introduction to the power and benefits of APL.

Among the enhancements in Release 2.0, many of which were suggested by current customers, are:

- An additional chapter in *APL Is Easy!* which describes more advanced primitives and techniques in APL.
- An expanded Reference Guide that includes detailed descriptions on system functions, how to use them, and examples. The new Reference Guide now also includes sections on keyboard usage, keyword usage, native files, and printer support.
- Expanded file size which allows creation of APL files limited only by the amount of disk space available.
- Format workspace that provides utilities useful in producing reports.
- Utilities to convert workspaces saved by IBM APL workspaces and to help familiarize users with APL.

Release 2.0 of Pocket APL will be available in August.

STATGRAPHICS®, APL★PLUS® PC ADD SUPPORT FOR IBM'S NEW ENHANCED GRAPHICS ADAPTER

Users of STSC's STATGRAPHICS and APL★PLUS PC system can now get high-resolution color graphics and high-quality text generation with the recently announced support for IBM's Enhanced Graphics Adapter (EGA) and Enhanced Color Display.

This allows users to take advantage of high-quality color graphics without sacrificing the quality of text and numeric displays, an ideal combination for engineers, statisticians, business analysts, and other professionals who are heavy users of both text and graphic modes.

The EGA allows 640-by-350 pixel bit-mapped graphics on IBM PC and compatible monochrome displays; full 16-color support in both the 320-by-200 and 640-by-200 modes available with the original IBM color display; and 640-by-350 resolution, 16-color graphics, and high-quality text generation on IBM's Enhanced Color Display.

For upgrades to either APL★PLUS PC or STATGRAPHICS versions that support the EGA, send the following:

- **APL★PLUS PC:** current APL ROM, system serial number, machine type, machine serial number, note requesting EGA version of APL★PLUS PC, and $35 for materials, shipping, and handling fee.
- **STATGRAPHICS:** all four original STATGRAPHICS disks, system serial number, machine type, machine serial number, note requesting version 1.1, and $35 for materials, shipping, and handling fee.

Customers requesting upgrades to both APL★PLUS PC and STATGRAPHICS at the same time need only send one $35 fee to cover shipping and handling for both products.

Send your request to STSC, Inc., 2115 East Jefferson Street, Rockville, MD 20852, attention Ms. Eddie Hobson-Hardy. If you have not registered your system(s), complete and return the registration card(s). Upgrades are available only to registered users.

STATGRAPHICS RELEASE IMPROVES FEATURES, ADDS NEW CAPABILITIES

With the release of Version 1.1, STATGRAPHICS is now more powerful, comprehensive, and versatile. Among the additions and improvements included in the new release are:

- Import/export facilities that work directly with data in Symphony™ worksheets.
- Ability to save automatic log-on parameters on floppy as well as hard-disk systems.
- Relaxed constraints on Seasonal Decomposition procedure so that it will operate with a minimum of two, rather than four, full seasons of data.
- Improved import/export capabilities for data in ASCII and DIF files and Lotus®1-2-3 worksheets.
- Improvements in the quality control procedures, Full-Screen Data Editor, and ANOVA procedures.
- Corrections to several user-reported problems.

The new STATGRAPHICS release also includes support for IBM's Enhanced Graphics Adapter and Enhanced Color Display. The new release began shipping in July. Users of the 1.0 version can upgrade to the new release—for details, see story above.

WHAT'S NEW?

NEW SIDELIGHT™ PRODUCT EXTENDS CAPABILITIES OF IFPS® PERSONAL

Sidelight, an IFPS/Personal utility package that provides powerful data transfer and graphics output, is now available from STSC, Inc.

IFPS/Personal, also available from STSC, is a business modeling and planning decision support system for micros combining financial modeling power with spreadsheet ease of use.

Sidelight expands IFPS/Personal's capabilities by enabling users to access and transfer data to and from Lotus 1-2-3, dBase II™ and dBase III™, Multiplan™, Symphony, and WordStar®. Sidelight's cross/file feature saves users from having to manually re-enter data from templates developed on other software systems, and automatically converts text and DIF files to the IFPS/Personal format.

The product also provides IFPS/Personal users with the ability to generate high-quality, presentation graphics. Sidelight supports pen plotters (HP74701, 7475A, Houston Instruments DMP-29/4X), printers (IBM and Epson graphics printers, both high and low resolution), the Polaroid Palette™ camera, and for the Hercules graphics adapter and IBM 3270 PC.

IFPS/Personal retails for $895; the utility package Sidelight retails for $95.

APL★PLUS PC NOW AVAILABLE FOR DATA GENERAL/ONE™

Data General Corporation's revolutionary briefcase-sized personal computer is the latest addition to the growing list of MS-DOS machines that can run the APL★PLUS PC System.

This additional support now enables users to carry the power of the APL★PLUS PC System while traveling.

The Data General/One uses the new 3.5-inch quad density diskettes. The entire APL system and distribution workspaces fit on a single diskette. Also, no special character generator ROM is required. The Data General/One has a programmable character set and a program is included with the software to generate the APL character set.

PC PLUS★WARE™ NEWS

PC PLUS★NEWS is published four times a year by STSC, Inc., and is distributed free of charge to registered licensees of the APL★PLUS PC System. Comments regarding the newsletter should be sent to:

Kim Trent, Editor
STSC, Inc.
2115 East Jefferson Street Rockville, Maryland 20852

Copyright © STSC, Inc. All rights reserved. Printed in U.S.A.

APL★PLUS is a registered trademark of STSC, Inc. PLUS★WARE and Pocket APL are trademarks of STSC, Inc.

STATGRAPHICS, IFPS, IBM, DEC and VAX, PC/AT, XENIX, and WordStar are registered trademarks of Statistical Graphics Corporation, EXECUCOM Systems Corporation, International Business Machines, Digital Equipment Corporation, Microsoft Corporation, and MicroPro International Corp., respectively.

UNIX and 3B2, CADMUS, Callan, Fortune, MicroVAX, ULTRIX, Polaroid Palette, Sidelight, Multiplan, Symphony, Data General/One, and dBASE II and III are trademarks of AT&T Bell Laboratories, Cadmus Computer Systems, Callan Data Systems, Fortune Systems Corporation, Digital Equipment Corporation, Polaroid Corporation, EXECUCOM Systems Corporation, Microsoft Corporation, Lotus Development Corporation, Data General Corporation, and Ashton-Tate Corporation, respectively.

APL★PLUS UNX SYSTEM NOW AVAILABLE FOR INDUSTRY'S MOST POPULAR MACHINES

With the recent addition of the IBM PC/AT®, DEC® VAX®, and AT&T's UNIX* PC ports, APL★PLUS UNX is now available to run on most of today's popular UNIX computers.

APL★PLUS UNX is an enhanced APL interpreter and application development system for the UNIX operating systems environment. APL★PLUS UNX combines all the best features and functionality of STSC's APL★PLUS Systems for mainframes and microcomputers with the latest software technology for the UNIX operating environments.

The APL★PLUS UNX system for the DEC VAX family runs under DEC's ULTRIX™ and Berkeley 4.2 UNIX operating systems on the full range of VAX machines, from the MicroVAX™ to the large superminis. The product takes full advantage of the VAX's large memory capacity, fast floating point hardware, and high performance files.

For the AT&T UNIX PC, APL★PLUS UNX includes a "soft" APL character set that transforms the console into an APL machine. The low cost of the UNIX PC, combined with APL★PLUS UNX's power and functionality, results in an excellent price/performance ratio.

APL★PLUS UNX for the IBM PC/AT using the XENIX® operating system includes STSC's standard APL character ROM and takes advantage of the AT's larger memory capacity for APL workspaces.

Other machines supported by APL★PLUS UNX include CADMUS™, Callan™, Fortune™, Hewlett-Packard Integral Personal Computer, Hewlett-Packard 9000/500, Spectrix, Wicat, AT&T 3B™2, 3B5, IBM S-9002, and Sun Workstations.

Prices for APL★PLUS UNX range from as low as $995 for the UNIX PC and the IBM PC/AT, to $11,995 for the largest machin

FILE DOCUMENTATION, SCREEN EDITING, AND EXCEPTION HANDLING ADDED TO TOOLS COLLECTION

The first module in Volume 2 of STSC's TOOLS product line— featuring file documentation, screen editing, and exception handling— is now available for $85.

The TOOLS product line is an ongoing collection of program development aids and utility subsystems designed for users of the APL★PLUS PC System.

Highlights of the utilities in the first module of TOOLS, Volume 2 include:

- File Documentation and Editing—a full screen-oriented PC utility to produce file listings, edit components of files, and audit changes to files, for both APL component and DOS files.
- Screen Editing—utility to aid in the construction and refinement of decorated and annotated screens and reference panels.
- Exception Handling—utilities to simplify the use of the APL★PLUS PC System attention and exception handling features.

New modules for TOOLS are derived from STSC's extensive library of proven mainframe and microcomputer software, and fro accepted submissions to STSC's Software Publishing Program.

Individual modules of TOOLS, Volume 1, are available separately, ranging from $50 to $150, or as a complete set for $295. A special linen binder is also available separately for TOOLS, Volume 1 or 2, for $20.

This column begins a series of articles drawing your attention to useful software in the PLUS★WARE products you may already own. In many cases, this column will explain how to use general-interest APL utility functions originally included as subroutines of other programs.

Character Matrices

The *SSMAT* function converts a segmented string into a matrix. This function and a speedier assembly language version called *CSSMATML* are illustrated in the □*CALL* section of APL★PLUS PC System Functions. *CSSMATML* can be found in the *UTILITY* workspace distributed with the APL★PLUS PC System. (The machine language version is also distributed with the original name *"SSMAT"* in the APL★PLUS PC TOOLS, Volume 1, workspaces *SCREEN, SCRNCARE, RAMDISK, REVERSI,* and *I78FNS.*)

Note that the machine language version only operates on character segmented strings, while the original pure *APL SSMAT* (found in the *INPUT* workspace of APL★PLUS PC) also operates on numeric vectors:

```
⍝ UTILITY workspace
CSSMATML '/ONE/TWO/THREE'

ONE
TWO
THREE

SSMAT 1 2 3 4 1 5 1 6 7 ⍝ INPUT workspace
? 3 4
5 0 0
6 7 0
```

The *OVER* function in the *UTILITY* workspace places one (rank ≤ 2) array above another after adjusting lengths for conformability. Thus the defined function *OVER* can be considered an extension of catbar (⍪), the primitive function that catenates along the first coordinate.

```
'ONE' OVER 'TWO' OVER 'THREE'

ONE
TWO
THREE
```

To place two arrays (rank ≤ 2) next to each other horizontally (extend the , primitive function), you could define

```
A BESIDE B
```

to be equivalent to

```
⍉(⍉A) OVER ⍉B
```

The *FOLD* function in the *WSCOMP* workspace of TOOLS, Vol. 1 will fold a character matrix into multiple "conceptual" columns:

```
3 FOLD □IDLIST 1 ⍝ WSCOMP
CNTR        OPPAGE      WRAP
DESCRIBE    OPPRINT     WSCOMP
DFLTDRV     OPPRINTFILE bEG
EXPLAIN     OPRAW       fCHK
   ⋮           ⋮           ⋮
```

The left argument can be extended to include up to five parameters:

- number of conceptual columns
- minimum number of spaces between columns
- number of leading spaces (indent)
- switch to list the entries down or across the columns
- maximum width of the result.

For example,

```
4 3 2 1 FOLD □IDLIST 1
```

returns the function list in four columns, with at least three spaces between names, indented two spaces, and enumerated across the page.

Also in the *WSCOMP* workspace is the *ROWFIND* utility; it performs a table look-up and returns the origin-1 index of the rows of the right argument in the matrix left argument:

```
X ← 3 5⍴ 'OPRAW?????CNTR '
(□IDLIST 1) ROWFIND X
2 1 0
```

Data Generation In STATGRAPHICS

In STATGRAPHICS, several short-cut ways of generating data series are available whenever you are prompted for a data variable. The simplest is the *COUNT* function, which is equivalent to APL's monadic iota: the input *COUNT 5* will produce the series *1 2 3 4 5*. You can use a comma (as in *DATA1,DATA2*) to connect several data series into one longer series. Use parentheses around any generated piece that is not just a variable name:

```
DATA1,(COUNT 12),DATA2.
```

Conversely, you can use square brackets and index numbers to extract a subseries from a data variable: *DATA[1 3 5 7 9 11]* produces the data from the odd-numbered positions in a 12-element data series. The slash function (/) lets you replicate each element of a data series a given number of times.

For example, *3/1 2 3 4* (or *3/COUNT 4*) produces

```
1 1 1 2 2 2 3 3 3 4 4 4
```

and can be used to construct quarter numbers for a monthly time series or sample numbers for several consecutive samples of equal size. You may even have use for the *?* function if you want to generate some random data (for example, when browsing through the many graph styles): *24?100* produces *24* random numbers between 1 and 100 selected without replacement. Use *?24/100* to generate 24 such numbers with replacement.

Two words of caution: the functions discussed above do not handle missing values. Use the STATGRAPHICS operators (see Section 9-3 of the STATGRAPHICS Users' Guide) when working with data variables containing missing values. Second, users inexperienced in APL should try not to combine more than one function into an expression without an appreciation of APL's "right-to-left" rule. In APL expressions, *all* functions, including *"COUNT", ",", "/", "[ ]",* and *"?"* are executed from right-most to left-most, but you can use parentheses to change the order of execution.

For example, *(2/1 4),3/5 7* produces

```
1 1 4 4 5 5 5 7 7 7
```

whereas *2/1 4,3/5 7* produces

```
1 1 4 4 5 5 5 5 5 7 7 7 7 7
```

continued on last page

Q & A

YOUR QUESTIONS

STATGRAPHICS

Q. How do I get a hardcopy of my STATGRAPHICS graph?

A. Just press the key labeled <*PrtSc*>. This key prints your graphs using the 960 dots-per-line graphics mode feature of your printer.

You can adjust the size of the graphics printouts using the "Select New Plot Options" procedure (see Section 10-4 of your STATGRAPHICS manual).

APL★PLUS PC System

Q. How can I underline words on my Epson FX-80?

A. You can send escape sequences to the printer to turn on and off underlining mode. The printer manual instructs you to send *ESC,'-1'* to turn underlining on, and *ESC,'-0'* to turn underlining off. If you put the characters into APL variables, you can imbed them in text in order to underline words. The following statements show you how to do this:

```
UNDLON ←⎕TCESC,'-1'
UNDLOFF ←⎕TCESC,'-0'
3 ⎕ARBIN 'THERE IS ', UNDLON,'ONE'
3 ⎕ARBIN UNDLOFF,'UNDERLINED WORD.',⎕TCNL
THERE IS ONE UNDERLINED WORD.
```

Q. Shouldn't the statement *0←(⍳5) ⎕FAPPEND 1* give me a *SYNTAX ERROR*?

A. You are correct. This is an oversight in the APL★PLUS PC System and will be corrected in the next release of the software. We recommend that you do not use this construct. To throw away unwanted output, we suggest you use:

```
0  0⍴(⍳5) ⎕FAPPEND 1
```


Can Your APL Talk To Your Mainframe?

Yes. Because the same powerful and robust APL available on your PC is available on IBM mainframes running VM/SP or MVS/TSO.

As more and more companies like yours recognize the vast gains in productivity available through APL, we welcome this opportunity to present APL at its best—the APL★PLUS Mainframe Software System! You get everything you get with APL★PLUS for the PC and more, like nested arrays and a true APL compiler. Call or write *now* for more information.

STSC, Inc.
APL★PLUS Mainframe Software Marketing
2115 East Jefferson Street
Rockville, Maryland 20852
301-984-5117

★★ Software Developers ★★

Turn your applications into profitable products! STSC is interested in evaluating third-party software for possible marketing opportunities. For more information on STSC's PLUS★WARE Software Submission Program, call or write for our free Software Submission Packet:

STSC, Inc.
Software Submissions Dept.
2115 East Jefferson Street
Rockville, MD 20852

301-984-5486

SUCCESS, ENTHUSIASM AT APL85 DEMONSTRATE IMPACT OF 'APL IN THE FUTURE'

"Not only has there been a past and present for APL, but evidence clearly shows there is a future for APL," according to Kevin Weaver, program chairman of the recently completed APL85 Conference in Seattle, Washington.

Weaver said his summary was based in part on the enthusiastic response and worldwide representation of more than 500 attendees.

"More important," Weaver added, "we saw an enormous amoui of interest in what's new and available in the APL field, regarding artificial intelligence, microcomputer products, and how APL is used in commercial applications. There was less emphasis on the language per se and more on how APL can be used in the corporate business and scientific community."

STSC, as the industry-leading developer and supplier of APL products and services, was at the forefront of activities at the conference. In addition to an exhibit of the full line of PLUS★WARE products, STSC's technical and marketing staff presented a number of papers and led panels, seminars, and tutorials.

STSC WINS "COMPUTE-OFF"

A highlight of the conference for STSC was winning the overall grand prize in a "compute-off" contest designed to test the strengths of various APL packages. The "compute-off" consisted of a series of problems designed to test the products' ability to handle a diverse range of applications. STSC won several of the individual contests on the way to earning the grand prize.

STSC's advantage at the competition was having APL★PLUS Systems running on a wide variety of different machines. STSC was the only company able to present benchmarks for several compatible APL systems running on a full range of machines—from microcomputers, supermicros, and minis to mainframes. In addition, STSC also had an APL compiler which enabled one of the programs on the mainframe to run eight times faster than under the interpreter.

According to Weaver, the excitement of the rapidly growing APL market promises to make APL86, scheduled for July 7-11 in Manchester, England, a "must" event for anyone involved with APL. For more information on APL86, contact BISL Conference Department, The British Computer Society, 13 Mansfield Street, Londo W1M OBP, England.

Published proceedings from APL85 are available for $25 (non-ACM members) and $19 (ACM members) by sending a check to ACM, Order Dept., P.O. Box 64145, Baltimore, MD 21264. Please use reference order number 554850.

SMALL SYSTEMS SOFTWARE CATALOG

This catalog provides a summary listing of APL application and utility software available from STSC and third-party developers. Software products available from third-party developers have not been tested by STSC. Their inclusion in this catalog does not constitute an endorsement or recommendation by STSC.

APL★PLUS PC SYSTEM.
APL application development system. Includes full-screen editor, communications capability, formatting functions, and windowing and scrolling functions. For IBM PC and compatibles. *Price: $595. Contact: STSC, Inc., 2115 East Jefferson Street, Rockville, Maryland 20852. (800) 592-0050. In Maryland or Canada (301) 984-5123.*

APL★PLUS PC Financial and Statistical Library.
Over 200 APL programs for financial and statistical analysis. Designed for use with the APL★PLUS PC System for stand-alone analyses or for building financial and statistical applications. For IBM PC and compatibles. *Price: $275. Contact: STSC, Inc.*

APL★PLUS PC TOOLS, Vol. 1 and Vol. 2.
Programming tools to increase the productivity of APL programmers. Available as complete set or as individual modules. For IBM PC and compatibles. *Price for complete set of Vol. 1, including linen binder and slipcase: $295. Separate modules from Vol. 1:*

- *Screen, Menu, and Output Management—$150*
- *Workspace Documentation and Cross Reference—$75*
- *Function and Workspace Maintenance, and RAM Disk—$75*
- *IRMA Support, File Transfer, and RAM Disk—$100*
- *PC-as-a-Host Computer Support and File Transfer—$75*
- *Electronic Board Games—Reversi and 3-D Tic-Tac-Toe—$50.*

Volume 2:

- *File Documentation and Editing, Screen Editing, and Exception Handling—$85. Linen Binder and Slipcase —$20.*

Contact: STSC, Inc.

APL★PLUS UNX SYSTEM.
APL application development system. Includes a powerful full-screen editor, terminal manager, partial compilation of code, very large workspaces, nested arrays, true multi-user environment, and a communications mode. For computers running UNIX. *Price: $995–$11,995. Contact: STSC, Inc.*

Pocket APL.
A complete implementation of APL including report formatting features, error trapping, native and APL shared file systems, online HELP, and over 50 system functions. For IBM PC and compatibles. *Price: $95. Contact: STSC, Inc.*

STATGRAPHICS.
A comprehensive statistical analysis package with high-resolution color graphics. Contains over 250 functions including ANOVA, regression analysis, experimental design, quality control procedures, multivariate techniques, nonparametric techniques, and extensive forecasting and time series analysis. For IBM PC and compatibles. *Price: $695. Contact: STSC, Inc.*

IFPS/Personal.
A business modeling and planning system for professional decision support applications. Features business modeling language and reporting; extensive financial, mathematical, logical, and statistical functions; mainframe communications; command file automation and customization, and "What If" and "Goal Seeking Target" analysis. For IBM PC and compatibles. *Price: $895. Contact: STSC, Inc.*

Sidelight.
IFPS/Personal utility package providing data transfer and graphics output. Automatically converts text and DIF files to IFPS/Personal format. Supports graphics on pen plotters, printers, camera, and monitor. For IBM PC and compatibles. *Price: $95. Contact: STSC, Inc.*

ACQMAN.
Designed to enable purchaser of capital assets to optimize means by which to finance them. Includes capability to compare lease vs. purchase, and to test unlimited number of different financial strategies. For IBM PC and compatibles. *Price: $5,000. Contact: A.J. Associates, 156 Keeler Drive, Ridgefield, CT 06877. (203) 797-8163.*

Corporate Consolidation Manager.
Menu-driven financial reporting system. Features automatic consolidation of four-dimensional, user-defined organizational structures, custom reporting, integrated color graphics, and data transfer from mainframe to PC and PC to PC. For IBM PC and compatibles. *Price: $1,500. Contact: LP Software, Inc., 400 Cross Keys Office Park, Fairport, NY 14450. (716) 223-1873.*

General Ledger (GL-ON LINE).
APL-based double entry set of books for small business, proprietorship, or corporation. Gives financial statements in IRS tax return format and detail trial balance. Menu-driven, runs on STSC's APL★PLUS PC. For IBM PC and compatibles. *Price: $50. Contact: Custom Computer Modeling, P.O. Box 434, Gloucester Pt., VA 23062. (804) 642-6864.*

continued from page 3

TREASURE CHEST

Upcoming

Upcoming "treasures" will include instructions on how to build a "menu of menus" (like the *WCSTATE* function in *WSCOMP* of TOOLS, Vol. 1, how to capture DOS directory information from APL with a subroutine in the *FILEDOC* workspace of TOOLS, Vol. 2), and how to integrate external processes into the APL★PLUS UNX System.

PLUS★WARE PRODUCT INFORMATION LINES

Orders	**800-592-0050**
Product Information	**301-984-5123**
Technical Support (HELP Line)	**301-984-5489**
Software Submissions	**301-984-5486**

PC PLUS★WARE™ NEWS

STSC, Inc.
2115 East Jefferson Street
Rockville, Maryland 20852

Return Postage Guaranteed

BULK RATE
U.S. POSTAGE
PAID
PERMIT No. 4590
ROCKVILLE, MD 20850

STSC
A CONTEL COMPANY

Win $1,000 and free software!
Details on Application Story Contest Inside!